

**CLAIMS**

1. A layered structure comprising
- 5       - a first intermediate layer, said first intermediate layer comprising at least one element of group IVB, group VB or group VIB;
- 10       - a second intermediate layer deposited on top of said first intermediate layer, said second intermediate layer comprising a diamond-like nanocomposite composition;
- a diamond-like carbon layer deposited on top of said second intermediate layer.
2. A layered structure according to claim 1, whereby said first intermediate layer comprises titanium and/or chromium.
- 15       3. A layered structure according to claim 1 or 2, whereby said structure further comprises at least a layer comprising a diamond-like nanocomposite composition on top of said diamond-like carbon layer.
- 20       4. A layered structure according to any one of the preceding claims, whereby said first intermediate layer has a thickness between 0.001 and 1  $\mu\text{m}$ .
- 25       5. A layered structure according to any one of the preceding claims, whereby said second intermediate layer has a thickness of 0.01 to 5  $\mu\text{m}$ .
- 30       6. A layered structure according to any one of the preceding claims, whereby said diamond-like carbon layer has a thickness between 0.1 and 10  $\mu\text{m}$ .
7. A layered structure according to any one of the preceding claims, whereby said nanocomposite composition comprises in

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proportion to the sum of C, Si, and O in at% 40 to 90 % C, 5 to 40 % Si, and 5 to 25 % O.

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8. A layered structure according to any one of the preceding claims, whereby said second intermediate layer comprises a metal doped diamond-like nanocomposite composition.
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9. A layered structure according to any one of the preceding claims, whereby said diamond-like carbon layer is doped with a metal.
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10. A substrate covered at least partially with a layered structure according to any one of claims 1 to 9.
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11. The use of a substrate according to claim 10 for high shear and/or high impact applications.
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12. A method to cover a substrate with a layered structure according to any one of claims 1 to 10, whereby said method comprises the steps of
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- providing a substrate;
  - applying a first intermediate layer, said first intermediate layer comprising at least one element of group IVB, group VB or group VIB;
  - applying a second intermediate layer, said second intermediate layer comprising a diamond-like nanocomposite composition;
  - applying a diamond-like carbon layer.